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ABSTRACT

This paper explores the use of a series of heuristic models that identify the interrelated components of the broader educational process. This heuristic schema was designed so that educators can examine the purpose and limitations associated with models and subsequently enhance their ability to guide changes within their own institutional setting. The paper begins examining the purpose and limitations associated with models as a means of analysis. Building on a systems perspective, it then discusses the way in which the communication process expands a basic system. The paper suggests that the Learning Paradigm, as well as the Educational Process, follow the Rhetorical Process. Since the Educational Process essentially extends the Rhetorical Process, the categories for analysis in the Learning Paradigm parallel the elements of the Rhetorical Process. Developing these categories more completely yields the Educational Process, thus leading to the identification of the interrelated elements that comprise an educational system. An elaboration of these elements constitutes the bulk of the paper. Since educational change requires extensive communication, the Transactional Model of Communication is presented to identify the difficulties encountered in reaching consensus. (Contains 79 references.) (RJM)

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Understanding Educational Change:

A Systems Model Approach

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Understanding Educational Change: A Systems Model Approach

Modern educators face numerous challenges. From outside their institutions, educators must answer to constituencies who demand greater accountability for the time, effort, and money spent on the educational process. Internally, educators must adapt to rapidly changing technology, to an expanding non-traditional student body, and to changing paradigms of the educational process. In reacting to pressure from one or other of these dimensions, educators may react too quickly, reaching for a single cure-all as a quick solution. But as a modern proverb has stated,

> When you're up to your knees in alligators, it's hard to remember that the original objective was to drain the swamp.

The proverb is now dated, of course, written before the advent of the Environmental Protection Agency and the preservation of wetlands; however, the proverb does remind us to focus on the broader picture. Educators must avoid focusing too narrowly on one aspect of the educational process (the loudest mouth), resulting in a piecemeal approach to education. Rather, educators must approach the educational process as a systems endeavor, which requires them to identify the interrelationship between elements prior to our changing individual components.

This paper presents a series of heuristic models that identify the interrelated components of the broader educational process. With this heuristic method, educators can better guide the changes occurring within their own institutional settings. The discussion begins by briefly examining the purpose and limitations associated with models as a means of analysis. Building on the systems' perspective, the Basic Systems Model forms the foundation for subsequent models. Expanding on this Basic Model, a more comprehensive Rhetorical Process Model identifies the broad set of elements that underlies any communication-related activity. This expansion distinguishes the more subjective from the more objective parts of the process.

Since the educational process extends the rhetorical process, the categories for analysis in the Learning Paradigm parallels the elements of the Rhetorical Process. Developing the categories more completely yields the Educational Process, identifying the interrelated elements that comprise an educational system. Elaborating these elements forms the bulk of our discussion. Finally, since implementing any educational change requires extensive communication, the Transactional Model of Communication identifies the types of difficulty encountered in reaching consensus toward any educational change.

MODELS AS PERSPECTIVES ON EDUCATION

Theoretical models help to explain an unknown by providing a schema that helps visualize or conceptualize some given phenomenon. A theoretical model uses the known to parallel the unknown phenomenon that one needs to understand. In more precise terms, according to Hesse, a model depends on some system of thought epistemologically prior to and independent of the particular phenomena that the model explains.[1] According to Kates, a model must identify the elements, the linkages that connect the elements, and the principles

[1]Mary Hesse, "Models and Analogy in Science, *Encyclopedia of Philosophy* Vol 5 (New York: Macmillan Publishing Co., 1967) pp. 354-359.

that underlie the elements and linkages. Practitioners can use such models as laboratories for examining the practical import of any changes within the system.[2] Even those who distrust theory and models tend to rely on conceptual schemas to organize data: as Richard McKeon summarized, "We are suspicious of systems of being and of knowledge, but we organize and systematize information and raise questions and draw new consequences from schematized data, facts, and relations."[3]

Along with their usefulness, however, models have significant limitations. Models can help the theorist in visualizing the education process only to the extent to which the model's assumptions reflect the applicable process. Inexact models, outdated models, or models based on inappropriate analogies can serve as blinders that prevent users from seeing the total reality. But even with the most precise model, the very construction of the model itself involves a significant drawback:

> Since a model is a static replication, a model of a dynamic process is inherently inexact. Any communication model will conceptually violate the transactional requirement as the model isolates and labels components for the sake of clarification and discussion.

People perceive the models in a static manner, even if the reality reflected by the model is a highly dynamic event. For example, the symbols describing a chemical reaction simplify our understanding of and ability to work with the starting and ending products of the reaction; however, the symbols by no means convey the dynamics or even explosiveness involved. Similarly in any communication event, people can simultaneously integrate many discrete activities: perceive, interpret, and respond to multiple aspects of a situation while remaining aware of multiple levels of meaning and implication. A model, however, makes these components discrete. Focusing on discrete elements of a model, while clarifying these elements, creates a static perspective at odds with the reality itself. As long as users of the model recall this limitation, the model can serve as a useful tool for studying, understanding, and discussing the communication process.

Beyond the general caveat regarding static portrayal of a dynamic event, models must meet specific criteria to ensure the validity of the model. Samuel Mudd identifies the criteria for establishing such validity: logical validity of a model depends on "(1) the extent to which it omits no phenomenon from the representation (deficiency = omission error); and (2) the extent to which it admits no extraneous meaning (contamination = commission error)."[4] Many of the existing education models suffer more from the omission rather than commission errors; and this type of error would be expected if the model focuses too narrowly on parts of the process. For instance, Stahl proposes a circle as a new model of education[5]; but his representation is actually more symbol than model because it lacks the detail needed for an effective model. Gauld proposes a model that distinguishes the

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[2]Robert W. Kates, "Natural Hazard in Human Ecological Perspective: Hypotheses and Models," *Economic Geography* 47 (Jul 71) 438-451.

[3]Richard McKeon, "The Uses of Rhetoric in a Thenological Age; Architectonic Productive Arts," in *The Prospect of Rhetoric: Report of the National Development Project*, Lloyd Bitzer and Edwin Black, eds. (Englewood-Cliffs, NJ: Prentice Hall, Inc., 1971) pp. 44-63

[4]Samuel Mudd, *Briggs, Information-Processing Model of the Binary Classification Task* (Hillsdale, NJ: Lawrence Erlbaum Associates, Publishers, 1983), p. 16.

[5]C. Larry Stahl, "A Proposed New Symbolic Model for Modern Education," *Education* 115:4 (Sum, 1995) 593 - 596

achievement-reward structure from the Character First process"; however insightful, this model again portrays only a small portion of the educational process.

To be effective in capturing the educational process, educational models must be comprehensive. Theobald and Nachtigal outline an ecological approach based on the metaphor of rural education.[7] While not yet comprehensive, it begins to identify elements of the wider system affecting the educational process. Sheeran and Sheeran approach the process historically with modern education as part of the Fourth Wave; this wave sees significant changes among the elements of schools, schooling, and teachers.[8] In a similar way, Willit, Boyce, and Franklin create a new Praxis Model that approaches a comprehensive approach.[9] And while not termed a model, the Learning Paradigm of Barr and Tagg contains elements of a comprehensive model.

For a model to be effective in examining educational change, it must be comprehensive, identifying the relevant elements form education as a system. Only then can the model serve as the basis of educational change. According to Michael Holzman, the failure of many attempts at educational reform stem from "the lack of a systematic approach: the failure to include all areas of the system in decentralized behavior."[10] Unfortunately, a comprehensive approach runs the risk of appearing too complicated; furthermore, such a comprehensive approach challenges the quick-fix mentality of Americans in general and educational bureaucrats in particular: "It's simply easier for educational bureaucrats to grab the latest quick fix and abandon it when the next sure thing comes along."[11]

Developing a model for educational change requires building a model on a solid foundation, then incorporating all of the interrelated elements that effect the educational process. It also must incorporate the dynamics of change within the system.

THE COMMUNICATION PROCESS EXPANDS A BASIC SYSTEM

To examine education, we can benefit from two interrelated focal points: education is ultimately a communication process; and both communication and education are best seen as systems of interrelated components. As systems, both education and communication involve inputs, specific activities aimed at reaching objectives, outputs of products and services, and feedback to evaluate the process. This underlying process appears as the Basic Systems Model, shown in Figure 1.

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[6]Joseph W. Gauld, "Meeting Each Student's Unique Potential: One Approach to Education," *NAASP Bulletin* 80:583 (Nov, 1996) 43-54.

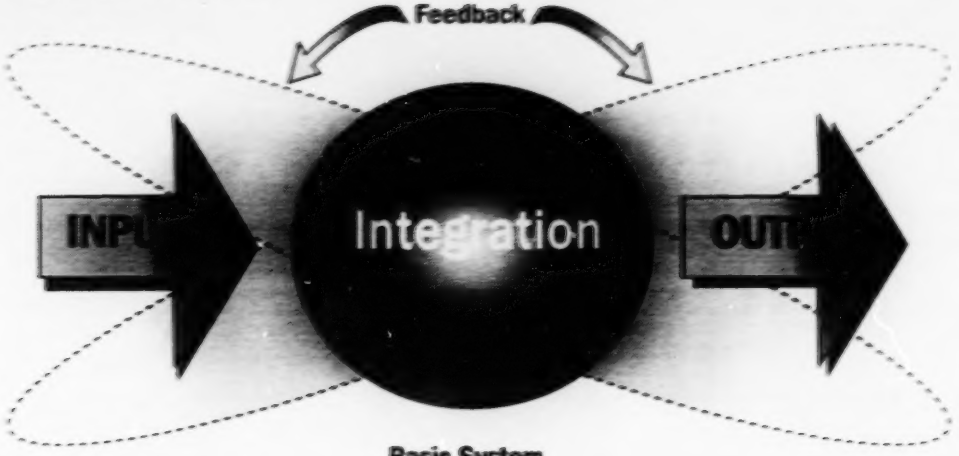
[7]Paul Theobald and Paul Nachtigal, "Culture, Community and Promise of Rural Education," *Phi Delta Kappan* 77:2 (Oct, 1995) 132-135.

[8]Thomas J. Sheeran, and Maureen F. Sheeran, "Schools, Schooling and Teachers: A Curriculum for the Future," *NAASP Bulletin* 80:580 (May, 1996) 47-56.

[9]John Willets, Mary E. Boyce, and Carol Ann Frenklin, "Parxis as a New Method in the Academy," *Adult Learning* 6:6 (Jul-Aug, 1995) 10-11.

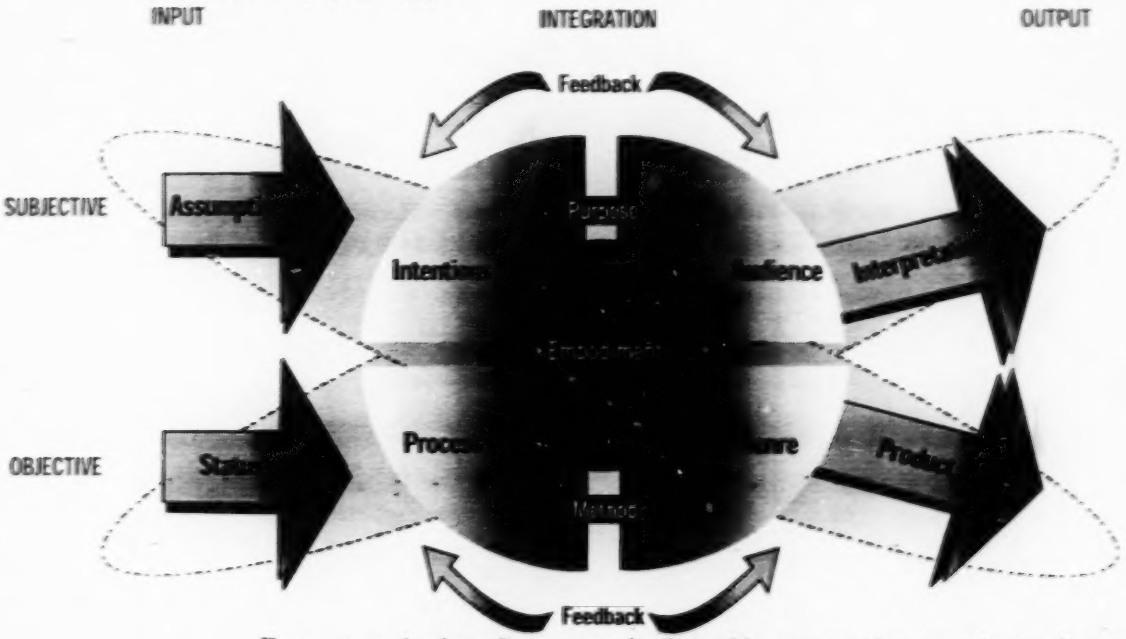
[10]Michael Holzman, "What is Systemic Change?" *Educational Leadership* 51:1 (Sep 1993) 18.

[11]Patricia Kean, "Reading, Writing, and Ripoffs," *Washington Monthly* 27:7-8 (Jul-Aug, 1993) 13-16.



Basic System

While the Basis Systems Model is a starting point, its categories are too broad. By dividing the model both horizontally and vertically, the Basic Model expands into the Rhetorical Process Model. The horizontal separation divides inputs into both status and assumptions, integration into purpose and method, and outputs into product and interpretation. The bottom half represent the more objective elements (status, method, and product), while the top half represents the more subjective elements (assumptions, purpose, and interpretation). The vertical division divides each of the central elements: purpose into intentions and audience, and method into genre and process. Figure 2 presents this expanded Rhetorical Process Model.



For communication, the process begins with status and assumptions. Status includes the historical facts about a given communicator, such as background, education, experience, and role for the given communication (educator, student, board member). Assumptions include both conscious and unconscious attitudes that underlie the encounter, including self confidence, attitudes toward others in the communication process, and cultural expectations.

The integration portion of the process, the center of the model, begins at the top with purpose, focusing on both intentions and audience. In any communication encounter, participants begin by determining their purpose: i.e., what they want to achieve (intentions) from a given audience. The purpose can include to gain a willing listener, to ensure understanding, to fulfill legal requirements, or to provide the basis for a long-term relationship). With a clear purpose, the communicator determines the method to use. The genre portion of method includes the types of communication, such as conversation, lecture, group discussion, written document, or workshop. The process part of method includes the sequence of ideas, word choice, visual or auditory accompaniment, and approach toward drafting or testing ideas. Although this central integration usually begins as a sequence (intention, audience, genre, process), these four elements tend to interact and cross field.

Ultimately, the interaction of purpose and method results in or embodies a communication product, the objective output. The output product is something seen or heard either directly or through some recorded medium. However, the real effect of the communication is not the output itself but the interpretation of that output. The interpretation actually ends the process, whether or not that interpretation matches the intended message of the sender or reflects a different message altogether. The communicator often verifies the actual vs the intended interpretation through feedback from the other party, through questions of a test of knowledge or skills. Feedback that matches the expected result may indicate successful communication, whereas unexpected feedback means that the communicator must regroup and continue the process.

THE LEARNING PARADIGM FOLLOWS THE RHETORICAL PROCESS

The Rhetorical Process Model follows the Basic System Model of input, integration, output, and feedback. These basic divide into objective and subjective halves of the process, with a further division of both purpose and method in the center. This Process Model also provides a conceptual frame for examining the Learning Paradigm, developed by Robert Barr and John Tagg:

> The paradigm that has governed our colleges is this: A college is an institution that exists to provide instruction. Subtly but profoundly we are shifting to a new paradigm: A college is an institution that exists to produce learning.[12]

In presenting the paradigm in their *Change* article, Barr and Tagg use six categories for their analysis:

Mission and Purpose
Criteria for Success
Teaching/Learning Structures
Learning Theory
Productivity and funding
Nature of Roles

Rather than function as independent categories of analysis, these categories actually fall within the Rhetorical Process Model. Figure 3 indicates the arrangement for the Learning Paradigm Process:

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[12]Robert Barr & John Tagg, "From Teaching to Learning: A New Paradigm for Undergraduate Education" *Change* 27:6 (Nov-Dec 1995) 12-25.

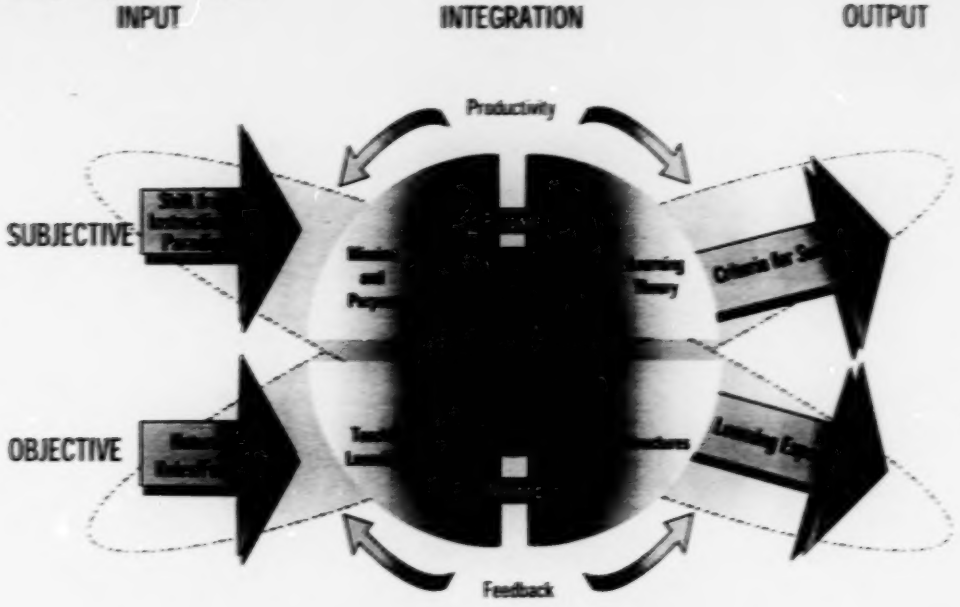


Figure 3: The Learning Paradigm Process

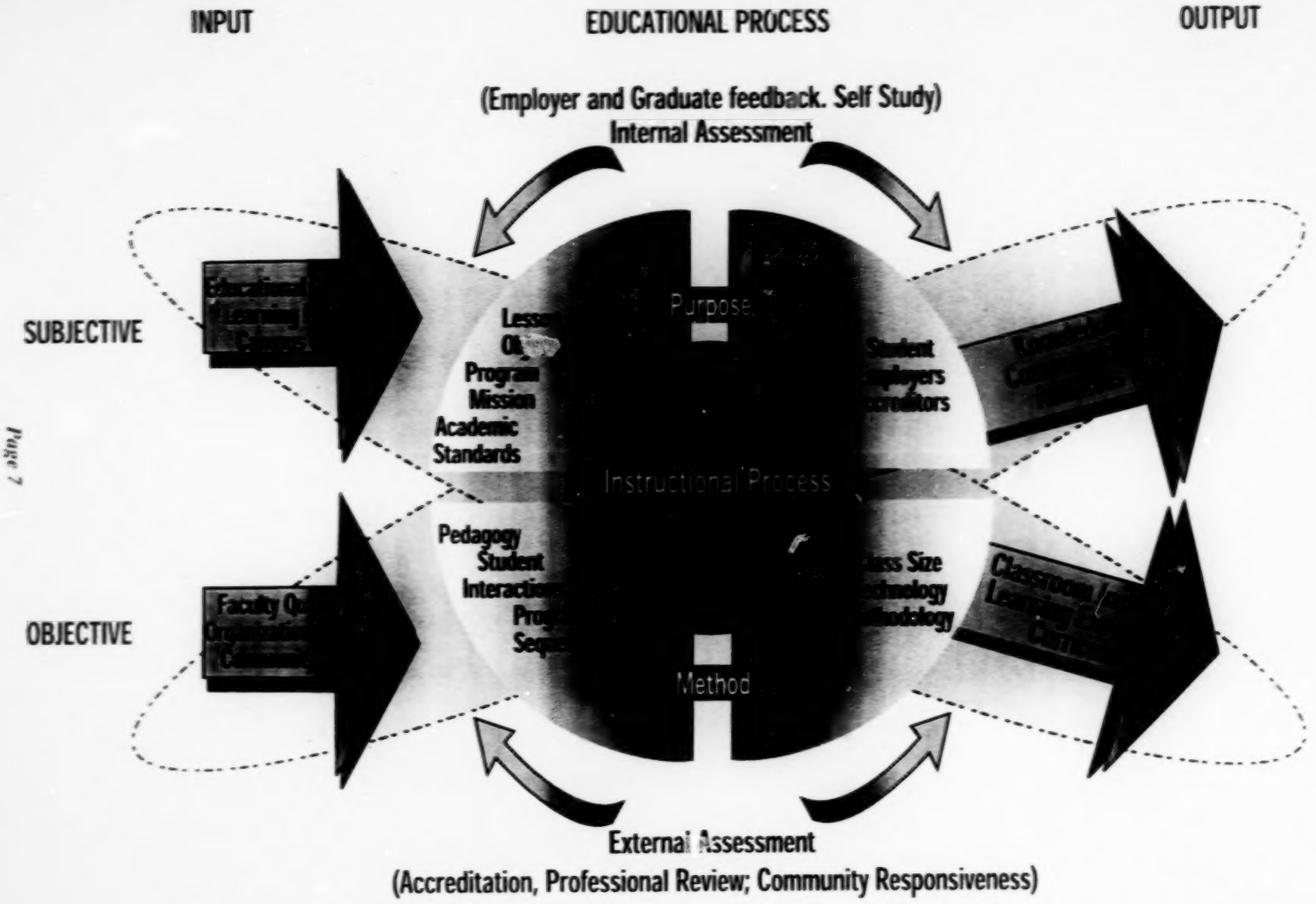
The process begins with the inputs of status and assumptions. For the Learning Paradigm, the status input would be the nature of roles in education, along with funding. The key assumption would be the significance of shifting from the Instructional Paradigm to the Learning Paradigm.

The integration portion of the model contains purpose and method. For the Learning Paradigm Process, the intentions include the mission and goals, while the audience becomes Learning Theory. The theory provides the guide to how students (the intended audience) function under the Learning Paradigm. The method portion of the model contains the Teaching/Learning Structures. The analysis by Barr and Tagg intertwines both the process and genre elements, so this category within the Process Model for now remains at the level of method. These central integration elements do not form a static sequence; rather, they interact dynamically to embody the educational process.

The output of the educational process is the objective learning experience, containing the "what happened" through education. The subjective interpretation of this happening involves the criteria for success, which determines how to evaluate the results of the process. The feedback loop concludes the model, measuring the productivity of the overall system.

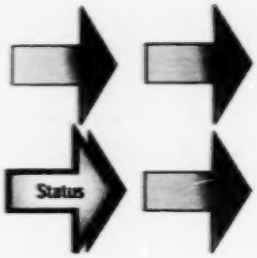
THE EDUCATION PROCESS EXPANDS FROM THE RHETORICAL PROCESS

Both as a communication process and as part of an organizational system, the education process follows the same pattern as that displayed in the Rhetorical Systems Model. Figure 4 presents the Education Process Model which identifies the specific elements of this basic rhetorical process as they apply to Education. The following sections briefly describe each element of the Model, with illustrations of the concepts coming from recent educational theorists and practitioners.



Educational Change: Systems Model

The educational inputs include both the objective status and the subjective assumptions. These general categories cover more specific elements based on concepts applicable to the educational process.



The process begins with the objective status elements; these elements represent the "givens" or limitations within which the educational process occurs. Faculty qualifications represent what the teacher contributes to the educational process. The organizational structure examines all of the components of the school, from the division of labor among teachers to the physical layout of the educational setting. And the community linkages indicate the ways in which a given educational program relates to the wider society and specifically those most affected by it.

Faculty qualifications reflects the background and experience of those primarily responsible for the process. Faculty come under increasing scrutiny as society demands greater accountability; and faculty often counter with an emphasis on tenure issues as a way to ensure academic freedom. Thus the teacher's freedom to expand the realms of knowledge without hindrance encounters the public's need to ensure the competence of student graduates. The focus on faculty can incorporate innovative approaches to faculty training, as seen in John Centra's discussion of teaching portfolios and the need to emphasize specific skills that faculty need to improve, such as motivational, interpersonal, and intellectual skills.[13] Others seek to more closely integrate research into the learning process, changing the faculty role from that of knowledge transmission to learning facilitation. Through this shift, faculty move from the *Quality A's* (quality assurance, accountability, audit, and assessment) to *Quality enhancement* (empowerment, enthusiasm, expertise, and excellence).[14] Professional teachers want more than a job: professionals have a passion for learning, taking opportunities themselves and challenging their students.[15]

Another significant input into the educational process is the organizational structure. Structure includes the physical facilities represents the space in which interaction occurs, ranging from a dedicated campus, specific building, meeting room, or cyberspace with internet connection. Physical space can foster or inhibit the learning process.[16] Since education most often takes place within schools or colleges, it occurs within some organizational structure; and like other organizations, schools work with, through, and in spite of the structure. In particular, a bureaucratic structure tends to limit decision making by the teachers involved.[17] But from a systems perspective, structure is not just one more element in the educational process. "Our ability to restructure schools," states Cardellichio, "depends on our ability to understand the complex and dynamic relationships between

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[13]John A. Centra, "The Use of the Teaching Portfolio and Student Evaluations for Summative Evaluation," *Journal of Higher Education* 65:5 (Sep-Oct, 1996) 555-570.

[14]David Kember and Jan McKay, "Action Research into the Quality of Student Learning: A Paradigm for Faculty Development," *Journal of Higher Education* 67:5 (Sep-Oct, 1996) 528-554.

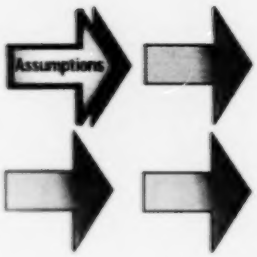
[15]Deborah A. Carr, "Collegial Leaders: Teachers Who Want More Than Just A Job," *The Clearing House* 70.5 (May-June, 1997) 240-242.

[16]Anne Taylor, "How Schools are Redesigning Their Space," *Educational Leadership* 51:1 (Sep, 1993) 36-41.

[17]J. Michael Palardy, "Needed: School Reorganization," *Education* 114:3 (Spr, 1994) 399-401.

teaching methodology, the structure of school, and types of learning."[18] Similarly, Richard DuFour concludes that "Those who seek to bring about meaningful change in a school must address both structure and culture to create the best climate for improvement."[19] Furthermore, organizational structure must realize how to incorporate technology, not just as add-ons to traditional curricula but as integral shifts to the structure of education.[20]

At the broader level of input, community linkages indicates the way in which the educational process fits within the wider community, whether as a public or private institution, part of a corporate training program, or even home-schooling. Linkages suggests that educational institutions are not self-contained, isolated dispensers of knowledge; rather, education is art of a wider system that not only provides the student inputs but also uses the resulting output product. Because of this interrelationship, campus reorganization should include discussions with multiple constituencies, including businesses, alumni, parent advisory groups, and citizen advisory groups; and perhaps most significantly, such discussions needs a sense of humility on the part of the educators involved.[21] Professional societies provide an alternative mechanism for school-industry partnerships.[22] By fostering such relations with the local community, schools can better serve community needs while gaining an ally from within the community.



The subjective inputs involve a greater range of interpretation, so they bring a greater degree of uncertainty into the process. Assumptions include aspects that educators consciously select, as well as those unconsciously accepted as the unquestioned starting point for actions. Assumptions begin with the philosophy of education and the learning paradigm that guides the overall process in any situation. Just as significantly, it includes the rather amorphous category of campus culture.

The assumptions begin with the philosophy espoused by the educator. This starting assumption, which significantly affects the overall process, may reflect such differences as those between Plato and Aristotle, Dewey and Skinner, or idealism and postmodernism. Even positions no longer held may prove insightful; as Becker indicates, "Although the underlying idealist philosophy has since been repudiated, the vision of unity is still a valuable way of resisting the postmodern trend toward fragmentation."[23] The philosophy may be more limited in scope and related to a given academic discipline. For example, in promoting a liberal democratic approach to teaching, Brunson and Vogt suggest that an empowering educational philosophy can create a tolerance for ambiguity through an environment of trust and collaborative learning.[24] But as with any other aspect of the

[18]Thomas Cardellichio, "Curriculum and the Structure of School," *Phi Delta Kappan* 76:8 (Apr, 1995) 629-632.

[19]Richard DuFor, "Restructuring Is Not Enough," *Educational Leadership* 52:7 (April, 1995) 33-36.

[20]Daniel E. Kinnaman and Odvard Egil Dyrli, "Part 2: Developing a Technology-Powered Curriculum," *Technology and Learning* 15:5 (Feb, 1995) 46-51; Denis Newman, "Technology as Support for School Structure and School Restructuring," *Phi Delta Kappan* 74:4 (Dec, 1992) 308-315.

[21]William Wresch, "Campus Reorganization: A Need for New Voices," *The Chronicle of Higher Education* 42:14 (Dec 1, 1995) P. B-3.

[22]Karen Hemminger, "ASM Begins School Partnerships Program," *Advanced Materials and Processes* 145:2 (Feb, 1994) 47-48.

[23]Gerhold K. Becker, "Unity and University: The Neo-Humanist Perspective in the Age of Post-Modernism," *International Philosophical Quarterly* 34:2 (Jun, 1994) 177-189.

[24]Deborah A. Brunson and Judith F. Vogt, "Empowering Our Students and Ourselves: A Liberal Democratic Approach to the Communication Classroom," *Communication Education* 45:1 (Jan, 1996) 73-83.

process, educators must recognize the difference between sound philosophy and the latest fads -- common sense formalized with a buzzword label where the wheel of education "goes around and around, and we keep recycling."[25]

Closely related to philosophy is the learning paradigm assumed -- do students learn by imitation or by self discovery; is the primary focus on teacher providing information or by providing materials for students to employ. The earlier section on the Learning Paradigm (Barr and Tagg) outlines one of the more recent examples of this element. Their work has become the impetus for an annual North American conference on this topic. But a similar discussion can appear under different labels. For example, an article in *Adult Learning* proposes a new assumption about learning based on collaboration and dialogue, where one's relationships within a societal context form an integral part of the educational experience.[26]

The campus culture, the third element of assumptions, recognizes that the groups involved (students, administrators, teachers, employers) contribute toward creating a unique environment for any educational encounter. The term *culture* is used here in the anthropological sense, combining all of the "givens" of our daily life in a community. Educators can have an influence on that culture, but they can have no absolute control over it, since all participants contribute toward creating the culture. Focusing on the classroom culture is part of the impetus of the learning paradigm, a well as the empowerment approach mentioned above; as Brunson and Vogt continue, "Such an atmosphere can create fundamental change in traditional classroom power relationships because instructors find opportunities to learn about themselves as teachers/learners and students become liberated to explore themselves as learners/teachers."[27] The concept of culture recognizes real differences among various educational settings. For example, in contrast a one-size-fits-all mentality, "A return to community-centered rural schools could be the answer to the post-industrialization era's varied educational and ecological challenges."[28] Although this *Kappan* article focuses on primary and secondary education, it highlights the type of culture evidenced within rural schools; this recognition of cultural uniqueness and its impact on education can apply to all educational experiences.

Assumptions have a significant impact on the educational process. By their very nature, assumptions are slow to change, since assumptions tend to reflect either the unquestioned basis for actions or the basic values that people hold with tenacity. These assumptions can change, but only if one is willing to clarify and question their underlying assumptions.

Purpose -- Intention and Audience

Central to the education process are the purpose and method elements. Here the purpose elements drive the process, where purpose includes clarifying the intentions and the audience for the education campaign.

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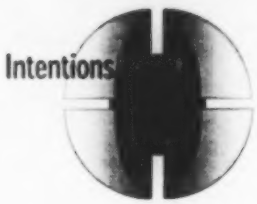
[25]Kean, 13-16

[26]Willets, Boyce and Franklin, 10-11.

[27]Brunson and Vogt, p. 73.

[28]Theobald and Nachtigal, 132-135.



At the lowest level, intentions involve the lesson objectives for specific classroom activities. These short-term activities contribute to the overall course or program objectives. Together, the activities of all educational entities come under the mission statement for a given program, school, or college. While the mission statements provide the focus for the types of activities, academic standards represent depth to which one carries the process and the quality focus that guides these activities.

At the individual class level, lesson objectives describe the intended outcomes of a given class hour. The objectives determine the desired outcomes, which ideally guide the construction of educational activities. Although lesson planning is ingrained within primary and secondary education, it is more problematic in higher education, as stated most clearly in an opinion column in *The Chronicle of Higher Education*:

- Higher education rarely deals with the goals of instruction directly and has avoided stating them in measurable terms.
- Courses and programs are rarely designed to provide each student with the chance to attain the competencies we agree on.
- Faculty members receive little reward for devoting significant amounts of time and energy to improving courses and curricula.
- Many people in higher education do not know how to design courses and curricula very well.[29]

Whereas primary and secondary education require its teachers to learn how to design courses, higher education only requires that professors be subject matter experts. Knowing a subject and planning lessons, however, are two distinct abilities. To improve this area, colleges may provide faculty development; but often faculty are left on their own for planning. The increasing availability of the internet provides alternate sources to assist in class planning.[30]

Educators select activities designed to meet individual lesson objectives which cumulatively will lead to fulfillment of the program objectives or the institutional mission. The intention of program design is to ensure that learners "experience interest, meaning, and purpose in teaching-learning situations."[31] The stated mission of the program becomes the starting point not just for instruction but for assessment as well; without a clear sense of mission, the institution has no method of evaluating its effectiveness or progress in reaching the mission. For all levels of education, developing the mission or setting the vision becomes a significant step in the educational change process.[32]

The third element of intention in the model is determining academic standards. This topic plays a key role in the Goals 200 project for American education, challenging teachers to exact higher standards, challenge with more difficult texts, and apply higher-order thinking skills.[33] Without standards, or with weak standards, educators have no reliable way

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[29]Robert M. Diamond, "Broad Curriculum Reform Is Needed if Students Are to Master Core Skills," *The Chornicle of Higher Education* 43:47 (Aug 1, 1997) p. B7.

[30]Gail Lovely, "Need Lesson Plans? They're Ready for You on the Net!" *Instructor* (1990) 106:5 (Jan-Feb, 1997) 102.

[31]Marlow Ediger, "Designing the Curriculum," *Education* 114:4 (Sum, 1994) 636-639.

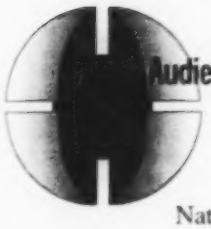
[32]L. David Weller, Jr., Sylvia H. Hartley, and Carvin L. Brown, "Principals and TQM: Developing Vision," *The Clearing House* 67:5 (May-June, 1994) 298-301.

[33]Robert G. Curley and Amy A. Strage, "Instructional Support and Demands: Helping Teachers Help Students Meet Increasing Academic Standards," *Education* 117:1 (Fall, 1996) 128-132

to measure success.[34] For higher education in particular, many analysts decry the lack of or decline in standards. "US colleges academic standards have been compromised by federal subsidies, competition for tuition money, and the idea that all Americans are entitled to a college education."[35] Gerald Kreychte goes even further:

> Institutions of higher learning have changed radically, making John Cardinal Newman's classic, *The Idea of a University*, an anachronism. Today Americans experience a clear-cut case of academic prostitution.[36]

By enforcing standards, teachers can be prepared to deal with a diverse student population,[37] and the challenged students will likely rise to the occasion, breaking the cycle of self-fulfilling prophecies.[38]



The audience segment of purpose obviously begins with students, the prime target of the educational process. However, the audience involves a wider constituency, including the employers of graduates as the direct audience, and accrediting agencies as an indirect audience.

The focus on students is the first and foremost concern in the education process. Nationally, the student focus appears as a call for greater accountability in public education. At the primary and secondary level, Paul Peterson states, "If public education in the United States were a business, investor would long since have put their money elsewhere."[39] Other researchers have expressed concern that increased spending in education has not resulted in a parallel increase in student performance; as Hanushek reports, instances of increased performance "are simply not determined by teacher training, class size, or overall level of spending."[40] Of concern in this equation is the fact that a teacher's career usually does not depend on how well the teacher's students perform. But any change must not be simplistic; for as Hanushek also recognizes, "those who initiate educational reforms must accept that there are varied approaches to learning, and what works for one teacher or student might not work for another."[41] Researchers must continue to clarify how students learn and what motivates them to improve. Teachers must learn to recognize the multiple intelligences of students, thus finding ways to better meet their needs.[42] Advances in artificial intelligence, while seeming to replace human understanding, actually provide insight into how the mind

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[34]Matthew Gandal, "Why We Need Academic Standards," *Educational Leadership* 53:1 (Sep, 1995) 84-86.

[35]Paul Gottfried, "Yes: Academic Rigor and the Job Market Are Victims of the Current System," *Insight on the News* 11:39 (Oct 16, 1995) 18-20.

[36]Gerald F. Kreychte, "The Prostitution of Higher Education," *USA Today (Magazine)* 123:2594 (Nov, 1994) 98.

[37]Christine I. Bennett, "Preparing Teachers for Cultural Diversity and National Standards of Academic Excellence," *Journal of Teacher Education* 46:4 (Sep-Oct, 1995) 259-265.

[38]Nina H. Shokraii, "Raising the Bar: Minority Pupils Excel the Old-Fashioned Way," *Policy Review* no. 7 (Mar-Apr, 1996) 52-56.

[39]Paul E. Peterson, "A Report Card on School Choice," *Commentary* 104:4 (Oct 1997) 29-33.

[40]Eric A. Hanushek, "Incentives are Key to Improve Schools." *Forum for Applied Research and Public Policy* 12:3 (Fall, 1997) 63.

[41]Hanushek, P. 64

[42]Get Source on Multiple Intelligences

works. With a systems focus, Harp, Samad, and Villano's modeling of student knowledge provides engineering insight into the psychology of learning.[43]

The second audience is that of the employers who hire the students. For our purpose, *employer* includes both business and industry, as well as the follow-on educational institutions who assume what students have learned earlier. Educators in general may tend to assume that they have a corner on the education market. These educators fail to recognize that "the largest educational system in the United States is neither the public schools nor institutions of higher education. It is the education and training workers receive from their employers or in the private marketplace."[44] Although employers provide significant education, they still rely on higher education to provide the starting point. Consequently, higher education must begin to focus on the needs of non-traditional students, especially older students forced back to school because of obsolete skills amid technological advances.[45] While the local community and society in general form the wider audience of graduates, employers become a crucial factor in the educational process.

The final component of audience, accreditors, include boards of education for school districts, state agencies who monitor higher education, boards of directors for corporate training programs, as well as the traditional accrediting agencies for geographic regions or for academic specialties. All of these entities provide some means of accountability external to the institution itself. These various accrediting audiences may become a dominant force in the process. As Angela Sewall indicates,

> The issue is whether we will make the 1990's a decade, not of pubic criticism of education nor one of governmentally mandated standardization of education but rather a decade in which educators took hold of their destiny and made systemic changes which placed American students and American education head and shoulders above that of other nations without loss of academic freedom or damage to the principles upon which American public and higher education has been based since the early 19th century.[46]

Assessment of performance should become a guide to more effective programs and a means to increase student achievement. To become such a guide, as Sewell continues, "We must know where we are now and why we are teaching, researching, and serving as we are. We must be able to measure what we are doing in a manner which is clear and understandable to the public as well as ourselves."[47] Contrary to self-imposed standards is imposition by accrediting agencies. The recent imposition of a political agenda by various accrediting agencies has resulted in a backlash from some institutions. In particular, private colleges with distinct missions geared to a specified student body have challenged the position that

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[43]Steven A. Harp, Tariq Samad, and Michael Villano. "Modeling Student Knowledge with Self-Organizing Feature Maps. *IEEE Transactions on Systems, Man, and Cybernetics* 25:5 (May, 1995)727-737.

[44]John Hood, "The Market Approach to Job Training," *Policy Review* 77 (May-Jun, 1996) 14.

[45]Merl Baker, "Sharpening the Focus of Viewpoints Between Higher Education and Employers of the Expertise Required for Contemporary and Future Technical Managers." *IEEE Transactions on Engineering Management* 40:3 (Aug, 1993) 212.

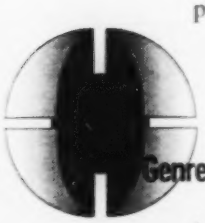
[46]Angela Maynard Sewell, "From the Importance of Education in the 80's to accountability in the 90's," *Education* 116:3 (Spr, 1996) 325-332.

[47]Sewell, passim.

some centralized body could impose a political agenda at will.[48] For institutions whose existence revolves around a specific academic philosophy, the imposition of national standards pose a significant risk. What schools need is a "genuinely open and collegial system of accreditation, one that allows governments to catch fraud and abuse and yet steers clear of political correctness."[49]

Method -- Genre and Process

The method portion of the education process involves the genres and specific processes used to create the education effort.



The genres focus on the structural components or the mode through the process occurs. These components include class size, technology, and pedagogy.

Class size determines the extent of interaction between teacher and student, and technology the various ways that make information available and enhance the process. Class size has become a significant issue in recent years, with educators pressing for smaller classes as a means of increasing individual attention. The issue becomes a major wedge between teachers and administrators, since small classes extract an enormous additional cost.[50] Unfortunately for the teachers, however, class size bears no relationship to improved educational performance.[51] Although class size does make a difference in the early primary grades, it has no effect on learning.[52] Aside from cost, smaller classes directly affects teacher workload, and small classes impact teacher effectiveness ratings.[53] While the controversy will continue to rage over class size, its effect on teacher workload constrains the type of educational activities available for a given class.

Technology involves access to information and the ability to manipulate data in the forms of text, numbers, and laboratory experiments. Technology can include reference books, laboratory equipment, audio/video equipment, computer processors, student networks, internet connections, and video conferencing. Technology in education has become a significant political issue, with pledges to wire classrooms to the internet. The availability of technology has brought expanded possibilities for education,[54] as well as increased expectation for a wider range of classroom applications.[55] But technology is not the end in itself; although advanced computers have gone beyond voice recognition and can

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[48]Thomas E. Dillon, "Coming after U: Why Colleges should Fear the Accrediting Cartel," *Policy Review* 72 (Spr 1995) 39-42.

[49]Dillon, p. 42.

[50]Thomas Toch and Betsy Streisand, "Does Size Matter? The Newest Trend Can Transform Schools — or Waste Billions of Dollars." *U.S. News & World Report* 123:14 (Oct 13, 1997) 22-27.

[51]Frederick Mosteller, Richard J. Light, and Jason A. Sachs, "Sustained Inquiry in Education: Lessons from Skill Grouping and Class Size," *Harvard Educational Review* 66:4 (WIn, 1996) 797-842.

[52]Biddy Passmore, "Small Is Best, But Not for Everyone," *Times Educational Supplement* no. 4142 (Nov 17, 1995) 6.

[53]Miguel Mateo and Juan Fernandez, "Incidence of Class Size on the Evaluation of University Teaching Quality," *Educational and Psychological Measurement* 56:5 (Oct, 1996) 771-778.

[54]Denise Orlando-Morningstar and James M. Buchanan, "The Virtual Classroom: Using On-line Conferencing to Deliver Training and Education," *Federal Probation* 60:4 (Dec, 196) 11-17.

[55]"What Do We Really Do with Technology?" *Change* 27:2 (Mar-Apr, 1995) 15.

translate thoughts into words on a screen, they still have limitations. "Obviously computers are quite incapable of original creative thought. The critical issue is that they cannot understand the meaning of their output."[56] Using technology requires changes among faculty, especially those whose personality sees these machines as making education too impersonal.[57] Additionally, using technology requires institutions to conduct extensive orientation and training.[58] The difficulty of integrating technology was described in a 1996 Campus Computing Survey: "Instructional integration and user support are the two most important IT [instructional technology] issues that American colleges and universities will confront over the next two to three years."[59] Ultimately, technology must be integrated into the educational process, serving as tools rather than masters. A century after he wrote them, the words of Alfred North Whitehead remain true today: "The best education is to be found in gathering the utmost information from the simplest apparatus."[60]

Methodology determines the linkage between the spoken word, the written word, and access tools in a given encounter. Methodology includes traditional lecture, individual student reading, completion of worksheets, work in small groups, and laboratory experiments. But methodology that reflects the learning paradigm must work with the multiple intelligences of students, reflecting their individual capacity and learning style. Such a methodology will allow for different ways of expressing what has been learned, leading to "performance-based, student-centered education."[61] Alternate methodology includes multi-sensory methods of teaching, as advocated by E. D. Hirsch, Jr[62]; and it includes learning contracts, which give students more control over the process, thus improving in knowledge, skills, and responsibility.[63] For the sciences, alternate methods include laboratory experiences that inspire students to change the way they think about scientific concepts.[64] Such alternatives do not eliminate the teacher. Rather, teachers must relate meaning to the information provided, giving students the opportunities for working with the material. This approach focuses on student understanding rather than pat answers to rote questions or canned experiments.[65] "This approach empowers students by making them active participants in the learning process while the focus is on process rather than

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[56]E. Lester Smith, "Inner Adventures: Thought, Intuition, and Beyond." Wheaton, IL: Theosophical Publishing House, 1988.

[57]L. Katherine Robbin, "Does Good Technology Outweigh the Bad?" *Christianity Today* 41:11 (Oct 6, 1997) 94-96.

[58]Orlando-Morningstar and Buchaan.

[59]Weinstein, p. 1.

[60]Alfred North Whitehead, "The Aims of Education," in *The Aims of Education and Other Essays* (New York: MacMillan Publishing, 1929), p. 11.

[61]Janet McClaskey, "Assessing Student Learning through Multiple Intelligences," *English Journal* 84:8 (Dec, 1995) 56-59.

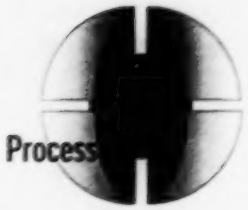
[62]E. D. Hirsch, Jr., "Why Traditional Education Is More Progressive?" *The American Enterprise* 8:2 (Mar-Apr, 1997) 42-45.

[63]Scott C. Greenwood, "Learning Contracts and Transaction: A Natural Marriage in the Middle," *Language Arts* 72:2 (Feb, 1995) 88-96.

[64]Susan L. Westbrook and Laura N. Rogers, "Doing Is Believing: Laboratory Experiences Promote Conceptual Change? *School Science and Mathematics* 96:5 (May, 1996) 263-271.

[65]Brian P. Coppola, Seyhan N. Ege, and Richard G. Lawton. "Instructional Strategies and Assessment," *Journal of Chemical Education* 74:1 (JAn, 1997) 84-94.

seeking a predetermined answer."[64] Methodology thus becomes a significant element in structuring an educational experience.



The process of education examines the sequence of activities and how the parts interact. Traditionally, these elements belong to the category of pedagogy, the way in which an educator prepares and guides activities for the educational encounter. But pedagogy focuses on the role of teacher. Process also involves student interaction in a broad sense, including interaction with the educational content, interacting with other students, and interacting with teachers. From a program perspective, process involves how the current educational activities fit within a broader pattern, such as class fitting within an entire course, course fitting within a program, and program fitting into career patterns.

Process concerns interconectivity, which begins with one's place within a historical and social context. In identifying the key characteristics of the current "postmodern" age, Zoreda indicates that "Perhaps the most outstanding trait is the affirmation that there are no historical assumptions; every facet of human culture is a social construction."[67] From this perspective, both objectivity and a valueless educational process would represent logical contradictions. Beyond reflecting its own social conditions, pedagogy provides the way educators sequence diverse elements of the educational process to achieve the greatest benefit for the students. One recent approach to change focuses on excitement in the process: "The Models for Change project team wanted to make equity education interesting, zealous, challenging, exciting and perhaps -- forgive us -- fun."[68] These educators wanted to add excitement to higher education, believing that "Excitement and interaction stimulate intellectual thinking if participants acknowledge one another, listen to their views, and value their contribution."[69] Teachers essentially design the process, and their design can focus heavily on teacher presentation, student individual work, or student group work. But the teacher should strive toward the process described by Alfred North Whitehead:

> Let the main ideas which are introduced into a child's education be few and important, and let them be thrown into every combination possible. The child should make them his own, and should understand their application here and now in the circumstances of his actual life. From the very beginning of his education the child should experience the joy of discovery.[70]

Student interaction plays a significant role in the educational process, including both teacher-student and student-student interaction. Different degrees of interaction would depend on the educational philosophy and specific learning paradigm emphasizing a teacher centered, student centered, self discovery, cooperative discovery process. This focus provides one way to instill motivation into the process. Skinner and Belmont identify motivated students, then the shift that occurs:

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[64]Seyhan N. Ege, Brian P. Coppola, and Richard G. Lawton, "Philosophy, Curriculum, and the Nature of Change," *Journal of Chemical Education* 74:1 (Jan, 1997) 74-83.

[67]Margaret Lee Zoreda, "Cross-Cultural Relations and Pedagogy," *American Behavioral Scientist* 40:7 (Jun-Jul, 1970) 923-935.

[68]Wendy Ruemper, "Models for Change: Antiracist Education for Universities and Colleges," *The Canadian Review of Sociology and Anthropology* 33:3 (Aug, 1996) 317-333.

[69]Ruemper.

[70]Whitehead, p. 2.

> Highly motivated children are easy to identify: They are enthusiastic, interested, involved, and curious; they try hard and persist; and they actively cope with challenges and setbacks.

But such students are harder to find in higher school levels:

> Research shows that across the preschool to high-school years, children's intrinsic motivation decreases and they feel increasingly alienated from learning."[71]

Increased interaction can help student performance, but for it to work requires that teachers win students' trust through listening and discussing.[72] Even large classes designed as college lectures can benefit from adding time for small-group interaction.[73] Interaction takes students out of passive roles, requiring active participation.

Since individual classes are not self contained elements, the program sequence reflects how a class fits into a wider course of instruction, and how courses relate to other courses in a broad program of instruction. "Educators need to pay careful attention to sequence in curriculum development," where the sequence determines when activities occur, and the scope determines the breadth and depth of instruction at a given time.[74] One approach to sequencing emphasizes core knowledge, where

> a coherent focus on content leads to higher-order thinking skills more securely than any other approach.... As an added benefit, children acquire knowledge that they will find useful not just in next year's classroom but for the rest of their lives.[75]

An alternative approach incorporates integrated projects into the curriculum, whereby students learn concepts as needed during a given phase of the project. Such an approach "minimizes the content-driven mindset so that needed skills can be taught and reinforced within the context of a legitimate application."[76] Regardless of which approach, the educator must provide the unifying sequence so that students can relate new objectives with knowledge already acquired.

Embodiment -- Education Synergy

Within the education process, the elements discussed so far do not occur in a linear sequence. Rather, they mutually interact to create or to embody the final education product. In the words of Emerson in "The American Scholar, There is never a beginning, there is never an end."[77]

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[71]Ellen A. Skinner and Michael J. Belmont, "Motivation in the Classroom: Reciprocal Effects of Teacher Behavior and Student Engagement Across the School Year," *Journal of Educational Psychology* 85:4 (Dec, 1993) 571-581.

[72]Girish Govindarajan, "Enhancing Oral Communication Between Teachers and Students," *Education* 112:2 (Win, 1991) 183-185.

[73]Thomas Russo, "A Collaborative Learning/Assessment Model," *Art Journal* 54:3 (Fall, 1995) 82-83.

[74]Marlow Ediger, "Sequence and Scope in the Curriculum," *Education* 117:1 (Fall, 1996) 58-60.

[75]E. D. Hirsch, Jr., Jeanne Storm, and Bruce Frazee, "The Core Knowledge Curriculum: What's Behind Its Success?" *Educational Leadership* 50:8 (May, 1993) 23-30.

[76]Dennis M. McFaden, Barbara A. Nelson, and Chip M. Randall, "Redesigning the Model: A Successfully Integrated Approach to Teaching and Learning," *NASSP Bulletin* 80:577 (Feb, 1996) 1-6.

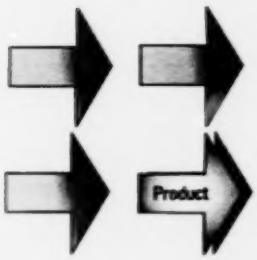
[77]Ralph Waldo Emerson, "The American Scholar," p. 79.

The embodiment element reflects the continual interaction of purpose and method. The initial focus on a student group may change after considering the impact of new instructional technology. Likewise changes in technology may bring about changes in the pedagogy used, which in turn may change the lesson or program objectives. As educators employ the various purpose and method elements, the interactive synergy will yield new insights that ultimately create new educational output products. And for the students,

> The mind does not perceive just detailed bits and pieces, but is constantly weaving a large pattern from our experiences. If you feed it with multi-impressions that are harmonized and orchestrated to achieve a specific objective, there's practically nothing it cannot learn.[78]

Output -- Products and Interpretation

All of the assumptions, preparation and decisions ultimately lead to the educational product itself. But the product is not just the objective product but the interpretation of that product.



The outputs from the education process are primarily the classroom itself, the element over which the educator has greatest impact. From the student's perspective, the output product is the learning experience, which involves how the student assimilates the entire process, both inside the classroom and outside. And finally, the output is the wider curriculum of instruction, usually measured in academic credits, learning hours, or degree programs.

The product begins with the actual classroom instruction itself, whether that instruction is the teacher's lecture, a class workshop discussion, a laboratory assignment, or an individualized computer tutorial. The instruction may include computer-based training, which some see as a way to reduce learning time and improve learning.[79] Kinnaman advocates a blending of resources: "Teachers and technology should be blended to create a balance between the critical and unique contribution of each to the learning process."[80] This blending appears in another research finding, which indicates that "When averaged together, the different kinds of classroom instruction and climate had nearly as much impact on learning as the student aptitude."[81] Ultimately, classroom teaching is an art more than a science: "The art of teaching is defined by the non-quantifiable elements of the transaction between teacher and student that ultimately determine the quality of the student's educational experience. It is not programmable. It requires human intelligence and interaction."[82]

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[78]Colin Rose, *Accelerated Learning* (New York: Dell Publishing Company, 1987), p. 116.

[79]Gary P. Maul and David S. Spotts, "A Comparison of Computer-based Training and Classroom Instruction," *Industrial Engineering* 25:2 (Feb, 1993) 25-27.

[80]Daniel E. Kinnaman, "Schools Need Good Teachers and Good Technology," *Technology and Learning* 15:8 (May-Jun, 1995) 98.

[81]Margaret C. Wang, Geneva D. Haertel, and Herbert J. Walberg, "What Helps Students Learn?" *Educational Leadership* 51:4 (Dec Jan, 1993) 74-79.

[82]Kinaman, p. 98.

The classroom instruction forms part of the wider realm of learning experiences, that include student homework preparation, the class itself, and the mingling of classroom and real-life experiences. Technology has expanded the types of experiences available, and telecommunication has also expanded the nature of the learning experience.[83] However, schools expect teachers to incorporate increased technology while failing to provide sufficient training for teachers.[84] Only as schools use technology as a mechanism for change will they take advantage of technology's potential. As alternative educational opportunities, work-based learning experiences[85] and service-based learning[86] provide the way to expand the learning process by integrating it directly into life experiences. Whether called internships, experiential learning, or cooperative education, these applied learning experiences permit students to test possible career choices while continuing their education.[87] Overall, the learning experience portion of the educational product range beyond the classroom instruction.

Within the broader educational context, the product is the educational curriculum, ranging from a short-term update workshop to a multi-year degree sequence. A curriculum usually reflects the educator's best efforts at organizing a learning sequence. Successful design depends on appropriate needs assessment, audience design, instructional design, curricular management, and materials selection.[88] Organizations can enhance curriculum development by providing tool kits of exemplary tasks, templates, design criteria, and assessment criteria.[89] However, modern curriculum development must incorporate the interests of students,[90] even enlisting students in curricular design.[91] In catering to students, educators must recognize the reality of modern society: "New educational technologies designed as much to entertain as to inform present challenges to curriculum design."[92] Differing needs, new technology, and alternative expectations all affect the changing nature of the educational curriculum.

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[83]Laverna Saunders, "From the Editor," *Computers in Libraries* 15:3 (Mar, 1995) 47.

[84]John O'Neil, "On Technology and Schools," *Educational Leadership* 53:2 (Oct, 1995) 6-12.

[85]Mary Agnes Hamilton, and Stephen F. Hamilton, "When is Work a Learning Experience?" *Phi Delta Kappan* 78:9 (May, 1997) 682-689.

[86]Barbara A. Lewis, "Serving Others Hooks Gifted Students on Learning," *Educational Leadership* 53:5 (Feb, 1996) 70-74.

[87]Tahira S. Stalberte, "Applied Learning: Internship and Co-op Opportunities," *The Black Collegian* 27:1 (Oct, 196) 68-69.

[88]Ellen D. Wagner, "Distance Education Factors," *Adult Learning* 7:1 (Sep-Oct, 1995) 18-20.

[89]Grant Wiggins, "Creating Tests Worth Taking," *Educational Leadership* 49:8 (May, 1992) 26-33.

[90]Rose Reissman, "Shop, Hang Out, Keep Current, Read: Training for Curriculum Design." *English Journal* 84:1 (Jan, 1995) 93-96.

[91]J. Ron Nelson and Lin Frederick, "Can Kids Design Curriculum? Yes!" *Education Digest* 59:8 (Apr, 1994) 42-45.

[92]Andrew Trotter, "Technology in Classrooms: `That's Entertainment,'" *Education Digest* 57:5 (JAn, 1992) 3-7.

Interpretation of the education efforts depends on the student and the wider constituencies. Most people see knowledge as the primary purpose of education, closely followed by competencies. In these two areas, people look for what a student can do (or do better) as the result of an educational process. But the attitude is also a significant interpretation, reflecting the students approach to education, to broadening life experiences, and to life-long learning.

Knowledge is obviously the desired output of the educational process. According to a series of educational experiments, "Contrary to popular belief, the results of all three experiments suggest that students remember a great deal of what they learn in college courses."[93] While knowledge or understanding are the preferred outputs, educators often face a significant difficulty: "Memorizing facts and being able to recall them upon demand is frequently the concept of learning perceived by government and regulatory agencies with jurisdiction over the educational system."[94] Rather than this limited perspective, educators and regulators must recognize multiple approaches to learning and must avoid using only their own preferred mode of learning.[95] To determine the competencies that students have achieved, educators have recently turned to portfolio assessment as a culmination tool in disciplines as diverse as art, writing, and business; however, portfolio assessment is relatively new in many of the educational disciplines.[96]

Often overlooked is the attitudes resulting from the process. Attitudes include attitudes about the self, about the subject matter, and about the educational process. "Teachers help students develop taste, discernment and judgment contributing to the growth of perspective."[97] Attitudes affect student motivation,[98] and student perceptions of caring from their teachers relates to students' evaluation of teachers, their affective learning, and their perceptions of cognitive learning.[99] The nonverbal immediacy of teachers "has been demonstrated to be substantially associated with increased cognitive and affective learning in students."[100] With ever-changing technology and adapting organizations, most educators and employers recognize the need for life-long education. The attitudes developed from a given educational experience will significantly impact both students and the wider society.

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[93]George B. Semb, John A. Ellis, and John Araujo, "Long-Term Memory for Knowledge Learned in School," *Journal of Educational Psychology* 85:2 (Jun, 1993) 305316.

[94]Donald R. Coker, Jane White, and Lee Ann Barton, "When Does a Learner `Understand'? Cognitive and Psychological Components in the Process of Understanding," *Education* 114:2 (Win, 1993) 242-246.

[95]Christopher J. Bachler, "Competencies All Trainers Need to Have," *Workforce* 76:6 (Jun, 1997) 94-95.

[96]Karen S. Karp and DeAnn Huinker, "Portfolios as Agents of Change," *Teaching Children Mathematics* 3:5 (Jan, 1997) 224-228.

[97]Daniel E. Kinnaman, "Schools Need Good Teachers and Good Technology," *Technology and Learning* 15:8 (May-Jun, 1995) 98.

[98]Christopher Orpen, "Academic Motivation as a Motivator of the Effects of Teacher Immediacy on Student Cognitive and Affective Learning," *Education* 115:1 (Fall, 1994) 137-138.

[99]Jason J. Teven and James C. McCroskey, "The Relationship of Perceived Teacher Caring with Student Learning and Teacher Evaluation," *Communication Education* 46:1 (Jan, 1997) 1-9.

[100]James C. McCroskey, Virginia P. Richmond, Aino Sallinen, Joan M. Fayer, and Robert A. Barraclough, "A Cross-Cultural and Multi-Behavioral Analysis of the Relationship between Nonverbal Immediacy and Teacher Evaluation," *Communication Education* 44:4 (Oct, 1995) 281-292.

Feedback -- Assessment and Accountability

Feedback gives multiple perspectives on the overall education process. Such feedback comes from those close to the process, largely internal, as well as those external to the process who serve as an objective review.

The first type of feedback is the internal assessment, driven by self-study of the educators involved. Some of the feedback on students comes in the form of performance on standardized tests, such as Iowa tests of basic skills, the College Boards, and professional engineering or accounting exams. Based on the feedback, educators can review and modify their process. Ideally, educators integrate assessment with learning as a way to achieve reform[101] Success in such an endeavor requires a systems perspective, with a close examination of educational philosophy and institutional culture. Using a perspective from anthropology, Audrey Kleinsasser identifies a key distinction in this process: the culture of testing vs the culture of assessment. In the testing culture, the teacher is judge, evaluator and scorekeeper; however, an assessment culture blurs the distinction between testing and learning, celebrating achievement rather than creating fine lines of distinction between abilities.[102]

A true internal assessment goes beyond standardized tests and teacher input; assessment needs input from class graduates as well as employers of those graduates. Student input often takes the form of end-of-course or end-of-program questionnaires, and such documents often focus heavily on assessing the teachers. Such feedback provides significant input into the assessment process, as long as the data is used appropriately.[103] More recent assessment approaches have expanded the audiences involved in the process to include administrators, employers, parents, and students themselves.[104] Such a broader approach views educational not as a self-contained process but as part of the wider social environment.

External assessment comes from those somewhat further removed from the educational process. Community agencies examine how the process fulfills local or state requirements. Regional accrediting agencies examine the entire process, usually focusing on consistency between stated objectives and the actual process. Professional societies focus on the subject matter, determining how well the program reflects industry or professional standards. Assessment has become a significant political issue this decade, ranging from the words used to describe the process to a debate on national testing. Education Secretary Lamar Alexander changed the way of talking about educational achievement, from a focus on the crisis of declining achievement toward a view that "achievement levels are not what they need to be to meet the challenges of the coming decades."[105]

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[101]Mary E. Diez, "Assessment as a Lever in Education Reform," *National Forum* 77:1 (Win, 1977) 27-30.

[102]Audrey M. Kleinsasser, "Assessment Culture and National Testing," *The Clearing House* 68:4 (Mar-Apr, 1995) 205-210.

[103]"Student Ratings of Teacher Effectiveness; Use and Misuse," *The Midwest Quarterly* 38:2 (Win, 1977) 18-33.

[104]Kathleen C. Reilly, "Expanding Audiences: Breaking the Circle of Assessment," *The Clearing House* 68:4 (Mar-Apr, 1995) 240-243.

[105]John Ralph, Dana Keller, and James Crouse," "How Effective Are American Schools?" *Phi Delta Kappan* 76:2 (Oct, 1994) 144-150.

Given the current political climate, politicians and educators recognize that educational effectiveness is a hot political topic. President Clinton pushed for a "voluntary" national testing program in his second administration; but some critics see significant problems in implementing such a system.[106] Not only are the logistics of such a program create an administrative nightmare, but such a program perpetuates a testing rather than an assessment culture. A broader perspective of assessment includes such variables a classroom assessment, instructional evaluation, accountability and monitoring, counseling and development, and the needs of students, parents, and their community.[107] Implementing such an assessment must start with a "clear vision of the meaning of academic success"; and in this process, schools must do more than rank order students from the highest to the lowest achievers; rather, schools must meet the growing demand for highly competent citizens.[108]

The Educational Process Model

The Educational Process Model identifies the elements involved in any educational system, ranging from elementary and high school, to corporate training, and to college degree programs. As a model, it indicates relationships between elements rather than the details that apply to any specific educational program. Teachers and administrators can use the model to identify the broad categories they must consider in implementing any educational change.

Identifying the elements that apply to a specific school or program is a significant first step in change. Only through such identification can the educators marshall the support needed to implement any change. The implementation itself, however, is a separate but related issue. Implementation means that many individuals must come together and agree on the content and process of change. In engaging in communication to discuss and plan such a change, each individual brings his or her own rhetorical process into the picture. To examine how this interaction occurs in implementing change, the following section uses the Transactional Model to describe the difficulties involved in successfully implementing change.

THE TRANSACTIONAL MODEL SHOWS THE DYNAMICS OF COMMUNICATION

The Educational Process Model describes the elements involved in any educational system. Implementing any change, however, requires an understanding of the transactional nature of communication. A transactional process occurs between two equal individuals engaged in their own rhetorical processes, simultaneously interpreting the communication both of themselves and of the other. Since transactions involves two interacting rhetorical processes, Figure 3-3 visualizes this new Transactional Model, built on dual Rhetorical Systems Models.

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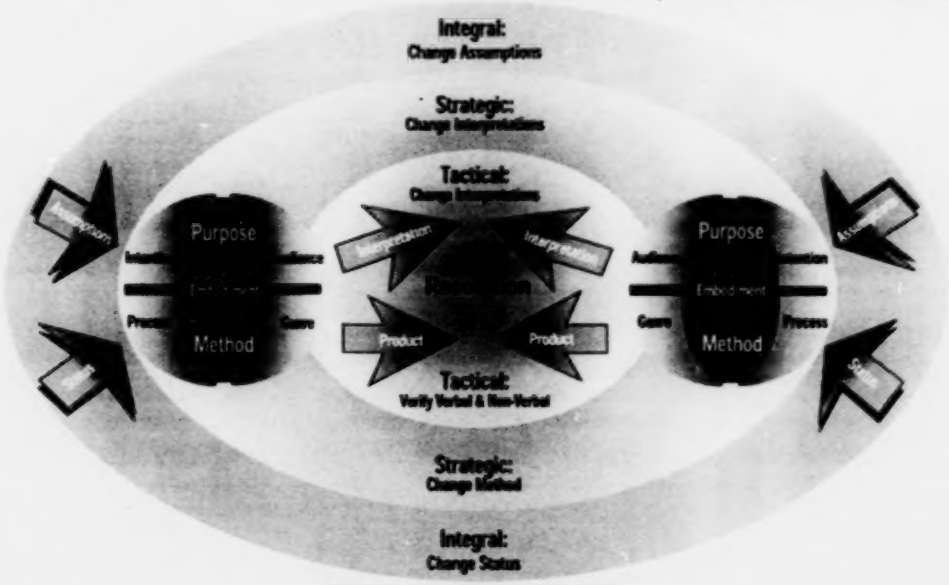
[106]Peter Schrag, "Testing, Testing: Clinton's Exam Flunks," *The New Republic* 217:17 (Oct 27, 1997) 14-16.

[107]Gregory J. Cizek, "The Big Picture in Assessment and Who Ought to Have It," *Phi Delta Kappan* 77:3 (Nov, 1995) 246-249.

[108]Richard J. Stiggins, "Assessment Literacy for the Twenty-first Century," *Phi Delta Kappan* 77:3 (Nov, 1995) 238-245.



Transactional Communication

Although all of the rhetorical elements discussed above still apply, the analysis of the transaction occurs along three expanding spheres which represent increasing degrees of tenacity: tactical, strategic, and integral. The smallest sphere in the center of the model, the tactical, is most volatile and rapidly changing in the on-going nature of the communication. Strategic contains the purpose and method for the communication, items that change but not as rapidly. The integral sphere, the widest sphere of transaction, contains status and assumptions, the slowest to change.

The transactional nature of communication interrelates the systems view and the rhetorical view. Feedback most frequently occurs at the tactical or interpretation sphere, where reaction is instantaneous as we engage in the process. If the encounter is not reaching resolution as expected, we may have to regroup at the strategic sphere of integration, where we change some aspect of purpose or method to continue to get across our desired effect. Finally, feedback may change our overall impression of the events, thus forcing a change at the integral sphere of our starting assumptions, either as we engage in communication or reflect on the encounter afterward. The transactional view helps us understand the difficulty involved in reaching a mutually satisfactory resolution during any communication activity. This same process occurs in trying to achieve educational change as well.

The Tactical Sphere Involves Rapid Interaction

The tactical sphere is the immediate encounter where we interpret the product, whether our own speaking or writing, or another's speaking or writing. Most of our conversations occur within this tactical center of the model. In a meeting with co-workers, we can appreciate the synergy of the encounter as ideas mutually emerge and build on each other. Afterwards, we may even have difficulty clarifying "who said what," since the initiator of the specific words or ideas ("product") is less important than how the transactional process develops and expands the ideas.

Achieving educational change at the tactical level concerns a focus on the product of classroom instruction, learning experiences, and curriculum. The objective, observable elements of the process, are easiest to discuss and perhaps reach agreement about. The more

subjective elements of knowledge, competencies, and attitudes create a bit more difficulty, as evidenced in continuing discussions about "what does an intelligence test measure?" As educators strive toward "objective measures of these three elements, they can improve the likelihood of reaching a tactical agreement. By definition, however, these "objective" measures tend to ignore relevant subjective aspects of these elements. As a result, educators will most likely never reach unanimity on how to define these interpretation elements of education.

The Strategic Sphere Changes Purpose and Method

Through differing interpretations and feedback, the transaction may make us reconsider our integration process. If we have made a mistake in what we said, our intention changes -- now in correcting a false impression or in saving face. If we believe that the listener still doesn't get our point, we may take a different strategy, involving different examples or analogies, or a different sequence of ideas. We may even expand the genres by drawing a diagram to go along with our conversation or find a reference in a printed text. In this case, we go beyond the interpretation of products and refocus on how we integrate possibilities to communicate. This strategic sphere of transaction may occur instantaneously as when we immediately realize a mistake and strive to correct it; or it may occur at a later time when we realize that we are still misunderstood and must re-group.

The strategic level of the educational process concerns the purpose and method elements of the educational system. Discussions gravitate toward methods, where elements such as class size, the impact of technology, sequence of instruction, and degree of student interaction have become significant topics in recent years. These objective elements of method can become manageable topics of discussion because they are more easily measured than the purpose elements. As part of the subjective elements, purpose creates an increasing amount of controversy, especially in determining mission and setting academic standards. Furthermore, recognizing a wider audience beyond students (including accreditors and employers) tends to threaten the educator's sense of primacy in the overall educational process. Achieving consensus among thee elements creates a significant strategic challenge for educators.

The Integral Sphere Changes Most Slowly

The wider sphere of the Transactional Model, the integral, concerns the input assumptions or status. As mentioned in the systems discussion above, these inputs tend to remain more stable, though they still can change.

Status changes most slowly, although a time gap can make the changes appear more clearly. Someone we knew as a student now is a practicing professional; however, we may have difficulty overcoming our earlier history of the encounter by not taking the person seriously and by still responding to the person we knew way back when. The status change is most difficult between parent and child: mere age never changes the "status" of the parent-child relationship, but it does change the status of the child in other relationships (occupation, marriage, becoming a parent). Some status changes are officially commemorated in communication events, like the public exchange of wedding vows, formal graduation ceremonies, or oaths of office.

The more common change occurs with assumptions. Here our interpretations and the feedback they generate force us to change our starting assumptions. For instance, after a lively meeting we may decide that one of the participants "is not that hard headed after all."

The cumulative effect of the encounter has forced us to change our original assumptions. Or we may re-read a document and realize that our original impression is false (we misread the document in forming our original interpretation); so our assumptions now change concerning the document or its position. As we acknowledge the false assumptions created by an erroneous yet real interpretation, we now change our assumptions. Most often, however, the strength of original assumptions resist change. We may not even realize that our own assumptions are getting in the way of our interpretation of what the other person is saying, a phenomenon known as *hardening of the categories*.

In the educational process, the integral elements are the most difficulty to change. Among the objective inputs, faculty and organizational structure tend to remain static, changing only slowly over time. Community linkages can change through the exertion of effort, but such efforts may have to overcome history and past perceptions of the educational institution. Subjectively, the educational philosophies and learning paradigms of the educators involved tend to reflect deeply held and felt values. Asking educators to rethink these values asks them to doubt themselves and what they have stood for many years. Similarly, the campus culture has evolved through the cumulative impact of multiple personalities over an extended period of time; while change is possible, it takes a significant persistent effort on the part of a dedicated cadre.

This conference on the Learning Paradigm asks educators to stop and rethink their basic assumptions about the educational process. And such rethinking is needed to make higher education more effective and responsive in preparing graduates for a rapidly changing world. But the process of translating such new assumptions into action is an extended journey. Such a journey involves many participants at individual institutions coming together to identify and examine the interrelated elements of education at their own institutions, and to reach a consensus on how their institutions should function. Despite the complexity of the task, the potential result is well worth the effort. And the effort can become more effective as long as we recognize rather than simplify the complexity involved.

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